

## Historic, Archive Document

Do not assume content reflects current scientific knowledge, policies, or practices.



LIBRARY  
RECEIVED  
★ MAR 24 1931  
U. S. Department of Agriculture

1.9  
P. 9 Ba Hd  
1930

# PROGRESS

of the

## Barberry Eradication Campaign

in

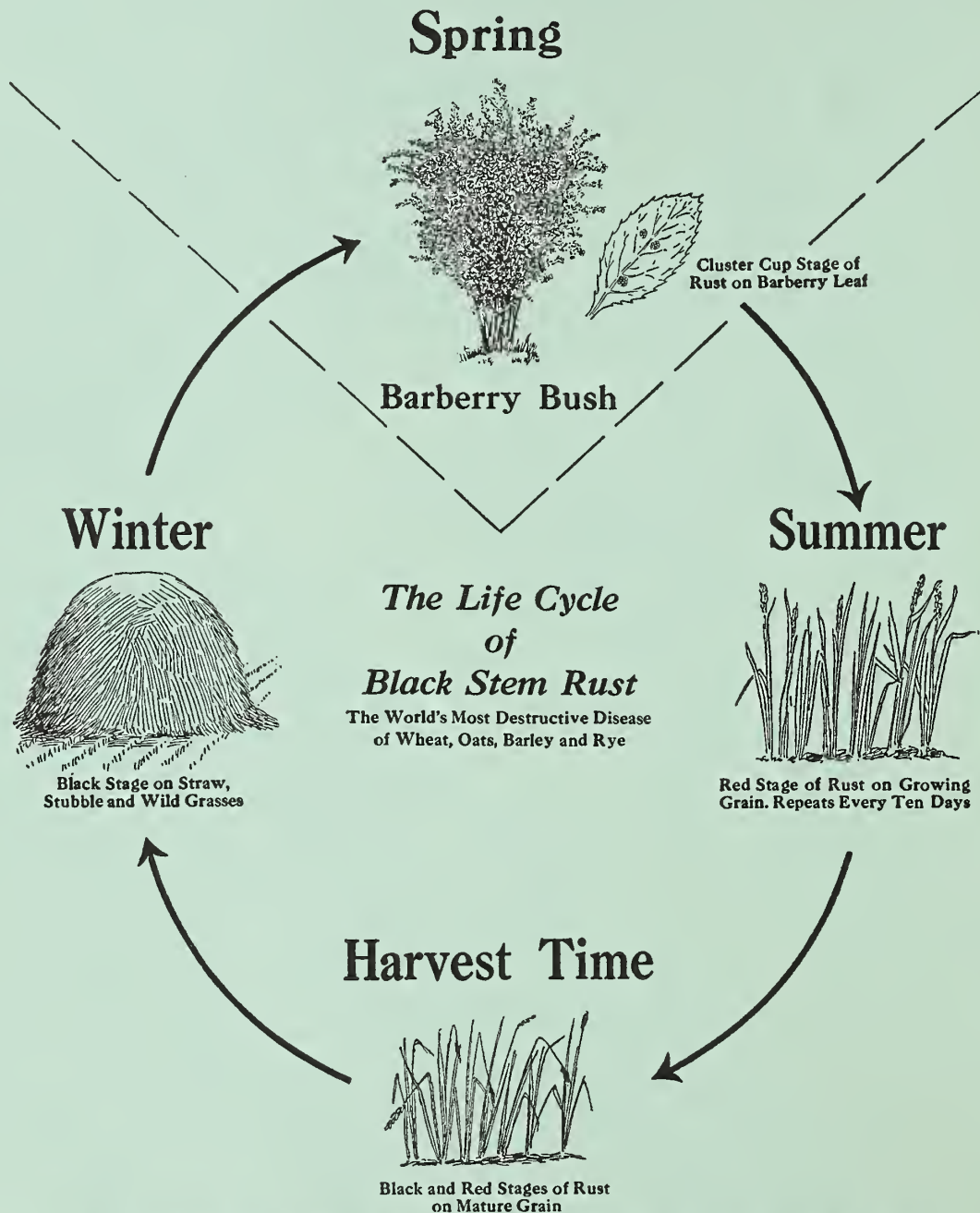
### North Dakota in 1930



*Black Stem Rust Spread From This Common Barberry Bush  
To Near-by Grain Fields Causing Severe Damage*

***Barberry Eradication Pays***

# Remove the Barberry and Break the Rust Cycle



All Common Barberries act as starting points for Black Stem Rust early each spring. By destroying the barberry the early spring source of black stem rust is eliminated. The Common Barberry provides a means to bridge the gap between the black stage on grain in the fall and the red stage of the rust on grains and grasses the following spring.

**BOOST BARBERRY ERADICATION—A PRACTICAL RUST CONTROL MEASURE**

PROGRESS REPORT  
of the  
BARBERRY ERADICATION CAMPAIGN  
IN NORTH DAKOTA  
1930

Prepared by  
George C. Mayone, District Leader 1/  
Joyce O. Roberts, Assistant Leader 2/

1/ Associate Pathologist, Office of Barberry Eradication,  
Bureau of Plant Industry, U. S. Department of Agriculture

2/ Agent, Office of Barberry Eradication, Bureau of Plant  
Industry, U. S. Department of Agriculture.

Dear North Dakotan:

This report has been prepared to bring you a brief review of the barberry eradication campaign to control BLACK STEM RUST, one of the most serious of small grain diseases.

Few people in North Dakota, if any, need an introduction to stem rust, for it has cost the State millions of dollars in grain losses.

Since 1918 the United States Department of Agriculture has been waging a persistent fight to control black stem rust by eradicating the common barberry bushes which spread it. There is no doubt but what the campaign is effective, for rust losses have steadily been reduced as the project has progressed.

Hoping that we may have your continued cooperation, I am

Very truly yours,

George C. Maycue,  
District Leader in Charge,  
Barberry Eradication.



## BARBERRY BRIEFS

### History at a Glance

COMMON BARBERRY bushes originated in Asia. Because of its medicinal properties, the seeds were brought to Europe.

The seeds were planted, and the bush rapidly became popular. It was soon found in the British Isles.

These bushes had many uses: Wines, pies, and jellies were made from the berries.

A yellow dye was obtained from the roots. Red ink was made by the addition of alum.

When the roots were boiled the water was used as a gargle for sore throats.

Vast hedges were used on the feudal estates to divide fields and turn cattle.

As early as 1600 black stem rust was so severe in some sections that many fields were worthless.

Finally in 1660 a law was passed in Rouen, France, prohibiting barberry bushes near grain fields.

However, barberry bushes continued to be planted in many regions.

At the time of the great land reforms in 1700 the barberry bush was the most popular hedge for dividing the fields.

Closely following this widespread use of the barberry, came black stem rust.

The "Barberry War" became serious by 1800. Groups of farmers destroyed large hedges by mob force.

De Bary, a German scientist, definitely proved that the barberry spread black stem rust, 1865.

He showed that the stem rust spent part of its life on the common barberry.

The "Barberry War" continued. In 1903 Denmark controlled black stem rust by a systematic eradication of her barberries.

SINCE THAT TIME DENMARK HAS BEEN FREE FROM DEVASTATING EPIDEMICS OF BLACK STEM RUST.

## The Barberry Comes to America

The early colonists to America brought berries and planted them, because of the many uses for the common barberry.

As the middle west was settled nurseries sold common barberries for ornamental and hedge plants.

By 1700 there were many bushes in New England, and with the barberries came black stem rust.

A serious rust epidemic destroyed many fields of grain in 1904.

The rust became so bad that in 1726 Connecticut passed a law against the common barberry, followed by Massachusetts in 1755.

It was conservately estimated that stem rust destroyed approximately 280 million bushels of wheat in the United States and Canada in 1916.

These laws were not rigidly enforced. The western settlers carried the barberries with them.

Grain farmers everywhere demanded that "something be done to control black stem rust".

## The Barberry Eradication Campaign 1917-1930.

The answer to the cry for relief was immediate.

In 1922 business interests of the Northwest organized the Conference for the Prevention of Grain Rust, with headquarters in Minneapolis, to aid the barberry campaign.

The next year, 1917, the North Dakota Legislature appropriated \$5,000 to destroy barberries within the State.

In many States the legislatures have appropriated funds to aid the Federal government.

In 1918 the U. S. Dep't. of Agriculture extended the campaign into 12 other North-Central wheat growing States.

Since 1918 more than 18 million bushes have been destroyed in the campaign area and over 28,000 in North Dakota.

These States are Colorado, Illinois, Indiana, Iowa, Michigan, Minnesota, Montana, Nebraska, North Dakota, Ohio, South Dakota, Wisconsin, and Wyoming.

During this time losses from Black Stem Rust have steadily been reduced.

**BARBERRY ERADICATION PAYS!**



# Black Stem Rust

spreads from Common Barberry Bushes  
to Wheat, Oats, Barley, Rye and many  
Grasses



Black stem rust of small grains is caused by a tiny parasitic plant. In the Northern States it lives for a time each spring on the leaves of common barberry bushes. The dust-like spores of the rust are spread by the wind for miles from barberry bushes to grain fields and from one grain field to another. Warm, moist weather aids the rapid development and spread of stem rust, just as the growth of corn, wheat, or other crops is affected by favorable weather conditions. Destroy common barberry bushes and reduce losses from stem rust.

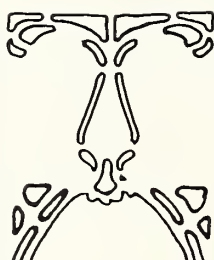
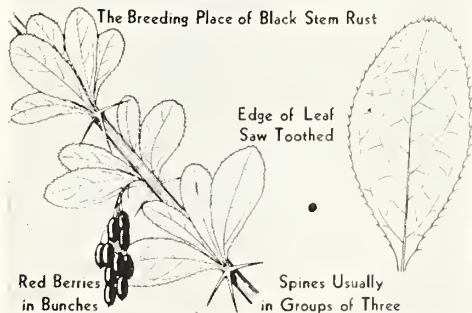
# Learn to Know Common Barberry



## COMMON BARBERRY

HARMFUL

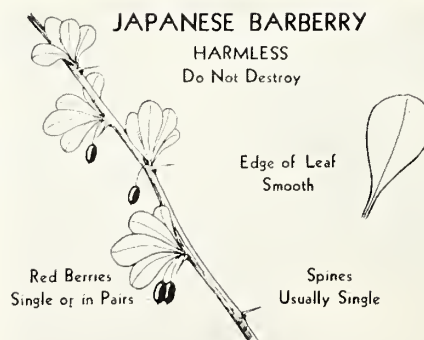
The Breeding Place of Black Stem Rust



## JAPANESE BARBERRY

HARMLESS

Do Not Destroy



Report common barberry bushes you may find, to the Barberry Eradication Office in your State, your Agricultural College, your State Department of Agriculture, or the Barberry Eradication Office, United States Department of Agriculture, Washington, D.C.



BARBERRY ERADICATION  
REDUCES  
BLACK STEM RUST EPIDEMICS.

There is nothing "freakish" or impossible about the problem of controlling stem rust epidemics by the eradication of common barberry bushes.

There are many kinds of rust which attack the various grains, grasses, and shrubs. Of these black stem rust is the most serious.

Like most other rusts, black stem rust is RED during its summer-growing stage. This is the time that it does the damage. In order to live through the winters in these Northern wheat States the rust must go into the BLACK or resting stage.

It then overwinters on stubble, straw piles, and grasses.

Before it can attack the growing grains in the spring the rust must first attack the barberry bush, on which the spores are produced that infect the grain. This is a known fact, first discovered by the German scientist, De Bary, in 1865, and proved by hundreds of experiments since that time.

That the rust must spend part of its annual life on the common barberry is no more queer than that the malaria fever germ must spend part of its life in a definite species of mosquito before again infecting a human being.

The whole life of the rust in the Northern States is merely a "round-robin" affair, from the wheat to the barberry, and from the barberry back to the wheat. Kill the barberries and in these States the rust will seldom, if ever, live through the year.

While it is known that some rust blows north from southern Texas where it overwinters on grasses and grains, observations over a period of years have proved that in normal years this rust does not arrive in time to do material damage in the Northern grain States.

Barberry eradication has proved to be a practical means of reducing black stem rust losses. It has been successful in foreign countries. In the present campaign area heavy rust spreads have been traced to common barberries. Destruction of the bushes has been followed by elimination of the local epidemics of rust.

## ORGANIZATION OF THE PROJECT

### Personnel

The barberry eradication campaign in this State is conducted by the United States Department of Agriculture in cooperation with the Agricultural College, Experiment Station, Extension Division, State Department of Agriculture, and other State and civic organizations. To provide close supervision of field activities, the work in North Dakota and Montana is conducted under a District Leader who is aided by an assistant leader in each State. Permanent headquarters for the campaign in North Dakota are maintained in the District Office at the North Dakota Agricultural College, Fargo, North Dakota.

### Cooperating Agencies

Realizing the value of the barberry eradication project, and convinced of its effectiveness in controlling black stem rust, many agricultural and non-agricultural agencies throughout the Northwest have given their support to the campaign.

In 1922 agricultural and allied interests of the Northwest organized the Conference for the Prevention of

Grain Rust, with headquarters in Minneapolis, Minnesota, for the sole purpose of aiding this project. It has rendered invaluable assistance in varying phases of the work.

Many State agencies have aided in North Dakota. Prominent among these groups are the Greater North Dakota Association, the Experiment Station, Extension Division, and other departments at the State Agricultural College. During the past several years very productive work has been carried on through the North Dakota Retail Merchants Association and the State Bankers' Association.

The whole-hearted cooperation of the State Department of Public Instruction has made possible the successful work that has been conducted in the schools of the State.

#### Financing

Approximately 90 per cent of the cash appropriations for the North Dakota Barberry Eradication Campaign has been furnished by the Federal Government, the State Legislature having provided the remainder.

### SUMMARY OF ACTIVITIES

1930

#### Survey and Eradication

Nineteen temporary agents were employed in 1930 to locate and destroy common barberry bushes in North Dakota.

An intensive survey was carried on in McLean, Mount-rail, and Burke Counties. Burke County was completed this year.

Because of the appearance of local rust spreads indicating the possible presence of bushes, special work was done in small areas in Dickey, McIntosh, Ramsey, Eddy, and Benson Counties.



During the year, 1,053 bushes, sprouting bushes, and seedlings were found on 46 properties in Burke, McLean, Mountrail, Barnes, Stutsman, Sheridan, Pembina, and Traill Counties.

Bushes were killed by application of crushed rock salt whenever it was possible to do so without harm to near-by valuable shrubbery. A few cases were found where it was necessary to dig bushes.

#### Education and Publicity

As the barberry bushes remaining become fewer in number, the need for widespread cooperation on the part of the public becomes more apparent. Reports of suspected bushes and local rust spread areas are of great value.

Because of this situation a greater effort is being made each year to bring facts regarding the project before the general public. The purpose of these educational activities is to explain the principles of the campaign, teach the identification of the common barberry bush and its relationship to the common barberry, stimulate the public to cooperate, and summarize and record the progress being made.

This work is carried on through the newspapers, by educating children in the schools, fair demonstrations, window displays, motion pictures and slides, and by radio talks.

#### Education in Schools.

Each year approximately one-third of the schools in the State are supplied with educational materials and lesson plans to be used in teaching the problem of stem rust control by barberry eradication. Laboratory slides and instructions for their use have been supplied to several hundred schools. Attractive files and materials supplementing the lesson plan have been provided by the Conference for the Prevention of Grain Rust.

# COMMON SALT KILLS BARBERRY BUSHES AND PREVENTS SPROUTING



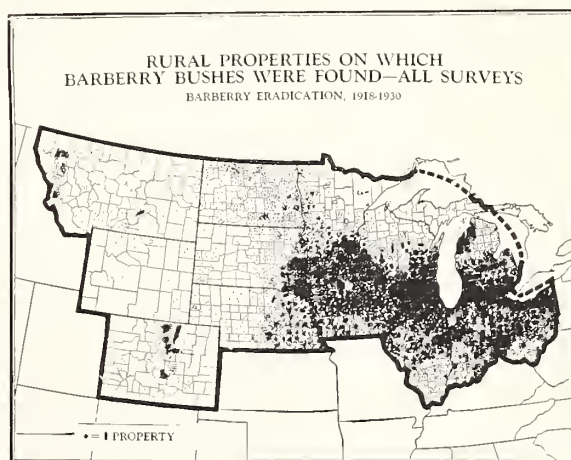
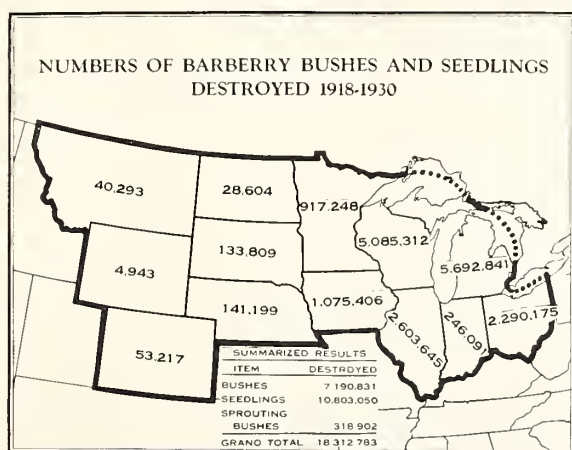
SALTING A BUSH



SPROUTS FROM DUG BUSH

Birds, animals and man chiefly are responsible for the wide distribution of the seeds of common barberries. Every fence row, thicket, pasture or wood is a possible hiding place for these bushes.

Every man, woman and child should consider it his or her duty to look for and report common barberry bushes.



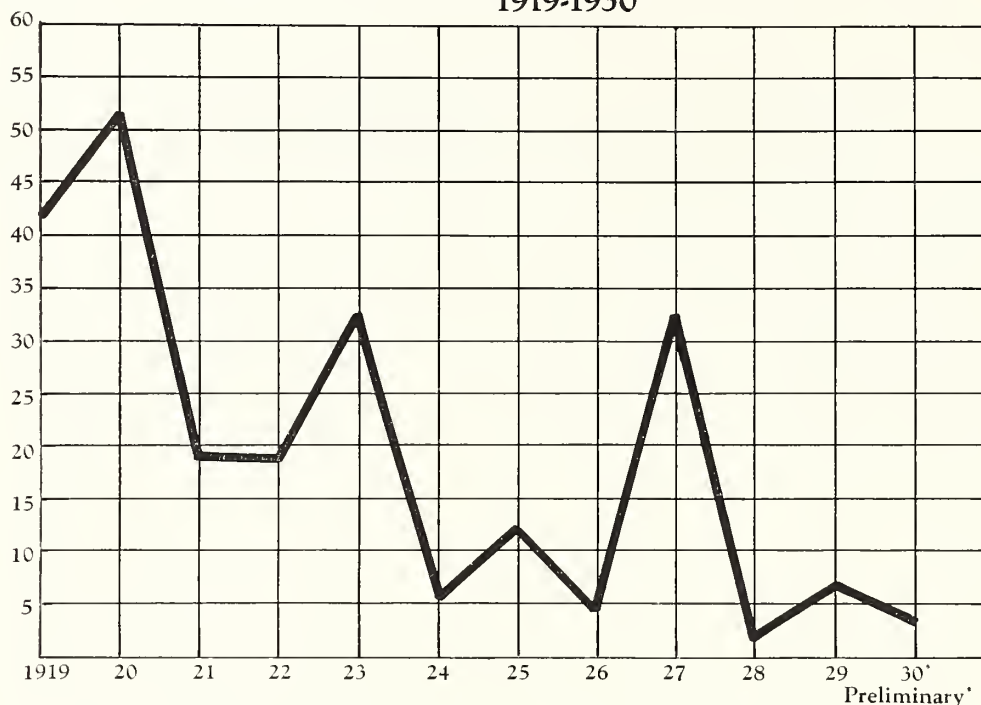
**More than 18 million sources of black stem rust  
were removed 1918-30**

Prepared by the Rust Prevention Association, 300 Lewis Building, Minneapolis, Minn., in co-operation with Bureau of Plant Industry, U. S. Department of Agriculture, Washington, D.C.

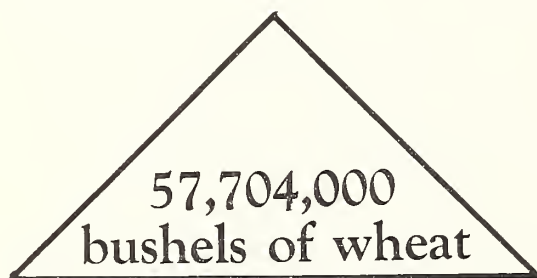
# Barberry Eradication Pays

In Millions  
of Bushels

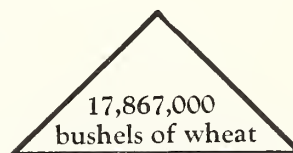
Wheat losses in Barberry Eradication Area  
1919-1930



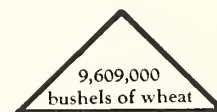
The losses to small grain crops caused by black stem rust have been reduced since the beginning of the barberry eradication campaign in 1918. The breeding of rust-resistant varieties, the use of early maturing varieties, and the sowing of crops early, have aided in this reduction.



Average annual loss  
five-year period  
1916-1920



Average annual loss  
five-year period  
1921-1925



Average annual loss  
five-year period  
1926-1930

Millions of bushels of oats, barley and rye also are  
damaged each year by black stem rust

Rust shriveled grain always is discounted

Destroy all Common Barberries—Reduce Losses from Stem Rust.  
Receive the Highest Available Price for Grain.

To stimulate greater interest on the part of the school children, an organization known as the National Rust Busters Club has been formed in the barberry eradication area. Many of the school children of this State have been organized into clubs of this kind.

All grade school children are eligible for membership, which carries with it a special Rust Buster's button. Members are taught to recognize barberry bushes and instructed where to look for them. To those members who find bushes the national organization awards an attractive bronze medal bearing the student's name.

#### Investigations

Each year the State office keeps a record of local rust epidemics that have occurred during the summer. When the recurrence of these rust areas indicate the presence of barberries, agents are detailed to an intensive survey of the suspected region. In the majority of such instances bushes have been found and their destruction followed by the elimination of the local rust epidemics.

Cooperative research with the North Dakota Experiment Station on the efficiency of dusting methods in controlling stem rust is being continued on the station plots.

During the past few years many of the barberries that have been found were bearing fruit. In most of these cases the seeds have been scattered and seedlings have grown up, giving rise to a problem of escaped bushes. Experiments with the growth of seedlings under natural environmental conditions are conducted. By these it is hoped to gain more definite information regarding the probability of escaped areas in the varying regions of North Dakota.



## THE FUTURE

### All Known Methods of Rust Control Must be Employed

While barberry eradication is of first importance in the control of local epidemics of black stem rust, there are several methods known to be effective in lessening the damage from this disease. Early sowing of grain, proper preparation of the seed bed, avoidance of low, poorly drained land, proper use of fertilizer, - in fact, anything that promotes early ripening, will reduce the danger from black stem rust.

Certain varieties of wheat, oats, and barley which are more disease resistant than others have been produced by plant breeders. Whenever these varieties meet the requirements of a given region and are desirable from yield, milling quality, and resistance to other cereal diseases, they should be substituted for the less satisfactory varieties.

### New Strains of Destructive Black Stem Rust

#### Develop on the Common Barberry

Entirely new strains or forms of black stem rust may be produced on the leaves of the common barberry. According to scientific discoveries there appears to be no limit to the number of strains of stem rust which can be produced as a result of hybridization on the barberry bush. This discovery was made recently by the Dominion Rust Research Laboratories at Winnipeg and by Dr. E. C. Stakman and his co-workers at the University of Minnesota, the two groups conducting independent research.

The certainty that new forms of this dangerous disease may appear suddenly makes the eradication of the common barberry all the more imperative, since it is on the barberry alone that the new forms occur. If for no other reason than to protect the new kinds of super-wheat now in the process of development, all common barberry bushes should be destroyed.



### BARBERRY ERADICATION MUST BE CONTINUED

Since the beginning of the barberry eradication campaign more than 18 million barberries have been destroyed in the area, and more than 28,000 bushes have been eradicated in North Dakota.

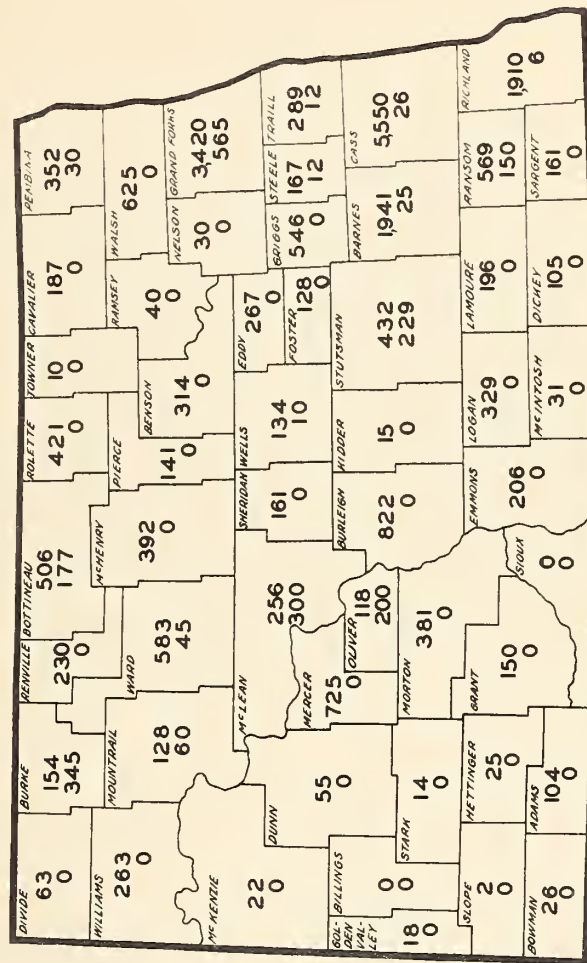
During this time losses from black stem rust have been REDUCED.

The task before us is to complete the project so successfully begun, because

BARBERRY ERADICATION PAYS



**NORTH DAKOTA**

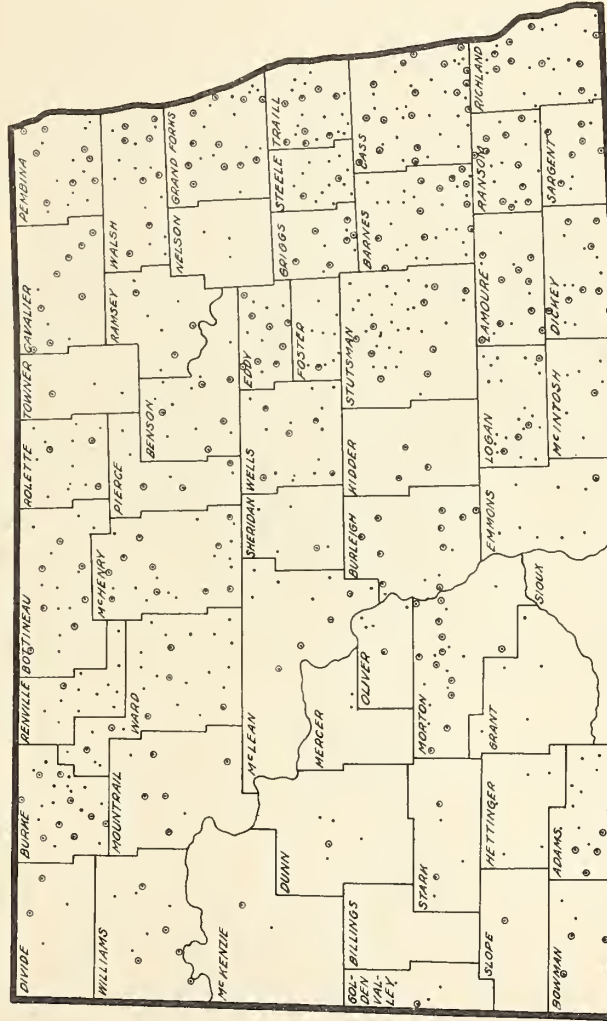


UPPER FIGURE=BUSHES DESTROYED.....	23,714
LOWER FIGURE=SEEDLINGS DESTROYED.....	2,192
SPROUTING BUSHES (NOT SHOWN).....	2,698
GRAND TOTAL.....	<u>28,604</u>



# PROPERTIES HAVING BARBERRY BUSHES 1918-1930

## NORTH DAKOTA



967 PROPERTIES  
28,604 BUSHES

FARMS HAVING BARBERRY BUSHES  
TOWNS HAVING BARBERRY BUSHES



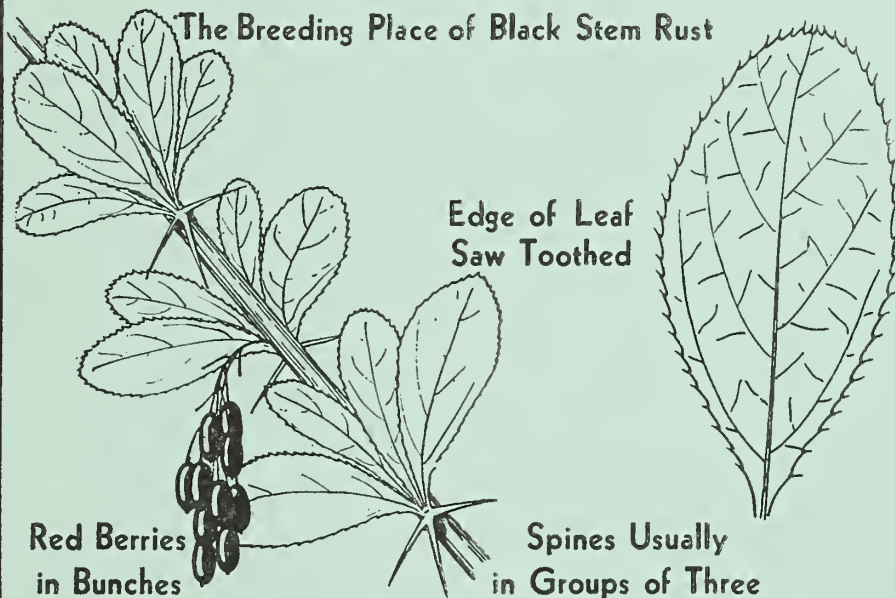


# Common Barberry Spreads Black Stem Rust

## COMMON BARBERRY

HARMFUL

The Breeding Place of Black Stem Rust



Red Berries  
in Bunches

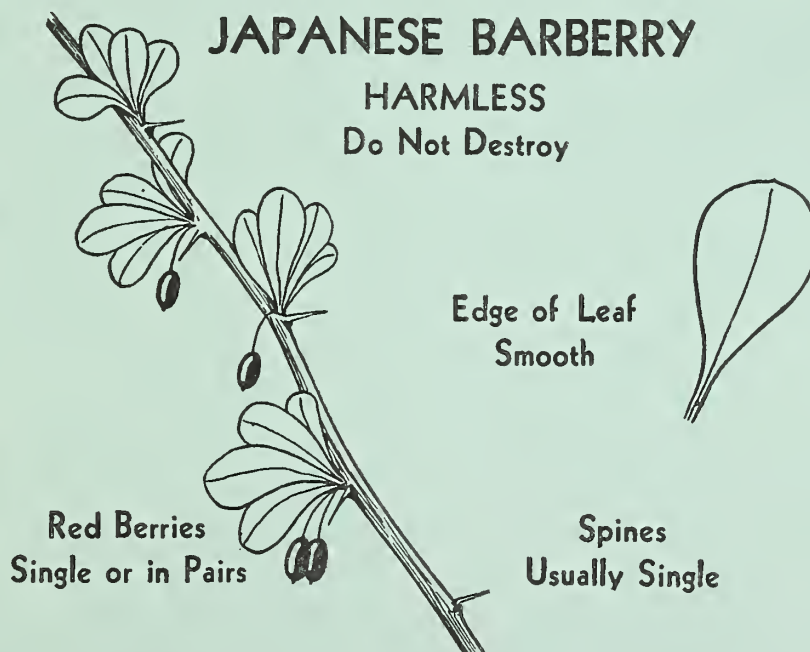
Edge of Leaf  
Saw Toothed

Spines Usually  
in Groups of Three

## JAPANESE BARBERRY

HARMLESS

Do Not Destroy



Red Berries  
Single or in Pairs

Edge of Leaf  
Smooth

Spines  
Usually Single

**Look For and Report All Common Barberry Bushes**  
*To the State Leader of Barberry Eradication, in care of your State Department of Agriculture or your State Agricultural College.*

# Common Barberry Bushes

*spread*

## *Black Stem Rust*

*to*

WHEAT, OATS,  
BARLEY, RYE,  
*and* Many Wild  
Grasses

**T**HIS Progress Report is prepared and printed by the Bureau of Plant Industry, U. S. Department of Agriculture, Washington, D. C. The cover is furnished by the Conference for the Prevention of Grain Rust, 300 Lewis Building, Minneapolis, Minnesota.